

DIAPHRAGM ACTIVATED MICRO-ELECTROMECHANICAL SWITCH

Abstract of the Disclosure

A micro-electromechanical (MEM) RF switch provided with a deflectable membrane (60) activates a switch contact or plunger (40). The membrane incorporates interdigitated metal electrodes (70) which cause a stress gradient in the membrane when activated by way of a DC electric field. The stress gradient results in a predictable bending or displacement of the membrane (60), and is used to mechanically displace the switch contact (30). An RF gap area (25) located within the cavity (250) is totally segregated from the gaps (71) between the interdigitated metal electrodes (70). The membrane is electrostatically displaced in two opposing directions, thereby aiding to activate and deactivate the switch. The micro-electromechanical switch includes: a cavity (250); at least one conductive path (20) integral to a first surface bordering the cavity; a flexible membrane (60) parallel to the first surface bordering the cavity (250), the flexible membrane (60) having a plurality of actuating electrodes (70); and a plunger (40) attached to the flexible membrane (60) in a direction away from the actuating electrodes (70), the plunger (40) having a conductive surface that makes electric contact with the conductive paths, opening and closing the switch.